

## CLAIM AMENDMENTS

1. (Currently amended) A short arc high-pressure discharge lamp (1, 28) for direct current operation, having a discharge vessel (2, 29) which includes two diametrically opposite necks (4; 30, 31), into which an anode (26, 36) and a cathode (7, 33), in each case made from tungsten, are fused in a gastight manner and which contains a fill comprising at least one noble gas and optionally mercury, characterized in that at least the material of the cathode tip (11, 34a), ~~in addition to the tungsten, contains~~ consists of tungsten, lanthanum oxide  $\text{La}_2\text{O}_3$  and at least one further oxide selected from the group consisting of hafnium oxide  $\text{HfO}_2$  and zirconium oxide  $\text{ZrO}_2$ .
2. (Currently amended) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the cathode material of the entire cathode (7, 34) ~~contains~~ consists of tungsten and  $\text{La}_2\text{O}_3$  and at least one further oxide selected from the group consisting of  $\text{HfO}_2$  and  $\text{ZrO}_2$ .
3. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the  $\text{La}_2\text{O}_3$  content of the cathode material is from 1.0 to 3.5% by weight.
4. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the  $\text{La}_2\text{O}_3$  content of the cathode material is from 1.5 to 3.0% by weight.
5. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the additional molar quantity of zirconium oxide  $\text{ZrO}_2$  and hafnium oxide  $\text{HfO}_2$  does not exceed that of the  $\text{La}_2\text{O}_3$  in the cathode material.

6. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the additional molar quantity of zirconium oxide  $ZrO_2$  and hafnium oxide  $HfO_2$  amounts to at least 2% of the molar quantity of the  $La_2O_3$ .
7. (Original) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in the electrode spacing between anode (26) and cathode (7) in the discharge vessel (2) is less than or equal to 8 mm.
8. (Original) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the electrode spacing between anode (36) and cathode (33) in the discharge vessel (29) is less than or equal to 15 mm.
9. (Original) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the lamp current when the lamp (1, 28) is operating is greater than 20 A.
10. (Currently amended) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the form of the cathode (7) is such that when the lamp is operating the current density J, i.e. the quotient of lamp current in A and effective cathode surface area in  $mm^2$  for an area which results from a section through the cathode perpendicular to the lamp axis at a distance of 0.5 mm from the tip of the cathode, satisfies the following equation:  
$$5 \leq J \leq 150$$
 $5 \leq J \leq 150$  in the case of a mercury/noble gas fill  
 ~~$25 \leq J \leq 200$  in the case of a pure noble gas fill.~~
11. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 2, characterized in that the  $La_2O_3$  content of the cathode material is from 1.0 to 3.5% by weight.

12. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 2, characterized in that the  $\text{La}_2\text{O}_3$  content of the cathode material is from 1.5 to 3.0% by weight.
13. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 2, characterized in that the additional molar quantity of zirconium oxide  $\text{ZrO}_2$  and hafnium oxide  $\text{HfO}_2$  does not exceed that of the  $\text{La}_2\text{O}_3$  in the cathode material.
14. (Previously presented) The short arc high-pressure discharge lamp as claimed in claim 2, characterized in that the additional molar quantity of zirconium oxide  $\text{ZrO}_2$  and hafnium oxide  $\text{HfO}_2$  amounts to at least 2% of the molar quantity of the  $\text{La}_2\text{O}_3$ .
15. (New) The short arc high-pressure discharge lamp as claimed in claim 1, characterized in that the form of the cathode (7) is such that when the lamp is operating the current density  $J$ , i.e. the quotient of lamp current in A and effective cathode surface area in  $\text{mm}^2$  for an area which results from a section through the cathode perpendicular to the lamp axis at a distance of 0.5 mm from the tip of the cathode, satisfies the following equation:  
$$25 \leq J \leq 200$$
 in the case of a pure noble gas fill.

**CLAIM STATUS:**

- Claims 1 - 2: (Currently amended)  
Claims 3 - 6: (Previously presented)  
Claims 7 - 9: (Original)  
Claim 10: (Currently amended)  
Claims 11 - 14: (Previously presented)  
Claim 15: (New)